

AMENDMENTS TO THE CLAIMS

Claim 1 (Original): A network comprising:

a hub device configured to generate a token and broadcast the token on the network; and
at least one peripheral device configured to receive the token broadcast by the hub device, determine whether the token identifies the peripheral device, analyze the token to determine a size and direction of a current data transfer when the token identifies the peripheral device, and transfer data to or receive data from the hub device according to the determined size and direction of the current data transfer.

Claim 2 (Original): The network of claim 1, further comprising:

a single wireless communication channel having a plurality of logical unidirectional communication streams, the data transfer occurring over one of the communication streams.

Claim 3 (Original): The network of claim 2, wherein the token includes:

an address of one of the hub device and the peripheral device, and
a stream number that identifies one of the communication streams.

Claim 4 (Original): The network of claim 2, wherein each of communication streams has a predetermined size and direction of a data transfer.

Claim 5 (Original): The network of claim 1, wherein the network operates according to a communications protocol shared by the hub device and the peripheral device to synchronize timing of communications.

Claim 6 (Original): The network of claim 5, wherein the communications protocol includes a plurality of frames, each of the frames including:

a signal that marks a start of the frame,
at least one token transmission that identifies the peripheral device, and
at least one data transfer opportunity that permits the hub device to communicate a data block with the peripheral device.

Claim 7 (Original): The network of claim 1, wherein the hub device includes:

a plurality of data blocks, each of the data blocks containing an address of one of the hub device and a peripheral device, a stream number that specifies a size and direction of transfer, and a data buffer, the hub device cycling through the data blocks to generate the tokens.

Claim 8 (Original): The network of claim 1, wherein the peripheral device is further configured to respond to at least two addresses.

Claim 9 (Original): The network of claim 8, wherein the peripheral device is further configured to associate at least one active communication stream with each of the at least two addresses.

Claim 10 (Original): The network of claim 1, wherein the peripheral device is further configured to respond to at least three addresses, one of the three addresses being an address of the hub device.

Claim 11 (Original): The network of claim 1, wherein the peripheral device includes a plurality of virtual peripheral devices.

Claim 12 (Original): The network of claim 1, wherein the hub device includes a memory including:

a link layer control structure that performs network bandwidth control and token planning,
network interface structure that determines whether and when to schedule a data transfer,
and
link layer transport structure that provides a reliable data transfer for the network interface.

Claim 13 (Original): The network of claim 1, wherein the peripheral device includes a memory including:

a link layer control structure that performs token planning,

a network interface structure that determines whether and when to schedule a data transfer, and

a link layer transport structure that provides a reliable data transfer for the network interface.

Claim 14 (Original): The network of claim 1, wherein at least one of the hub device and the peripheral device is further configured to transfer data in multiple forms.

Claim 15 (Original): The network of claim 14, wherein at least one of the hub device and the peripheral device is further configured to transmit the data in an original form and at least one of a complemented form and a reverse order form.

Claim 16 (Original): The network of claim 14, wherein at least one of the hub device and the peripheral device is further configured to differentiate the multiple forms of the data by a communications stream on which the data was transmitted.

Claim 17 (Original): The network of claim 14, wherein at least one of the hub device and the peripheral device is further configured to combine the multiple forms of the data to reconstruct the data.

Claim 18 (Original): The network of claim 1, wherein the hub device is further configured to schedule transmission of a status block from the peripheral device.

Claim 19 (Original): The network of claim 18, wherein the hub device is further configured to schedule transmission of data from the peripheral device when the status block from the peripheral device indicates that the peripheral device has data ready for transmission to the hub device.

Claim 20 (Original): A network comprising:

hub means for generating a token and for broadcasting the token on the network; and
peripheral means connected to the hub means, including
means for receiving the token broadcast by the hub means,

means for determining whether the token identifies the peripheral means,
means for analyzing the token to determine a size and direction of a current data transfer
when the token identifies the peripheral means, and
means for transferring data to or receiving data from the hub means according to the
determined size and direction of the current data transfer.

Claim 21 (Original): A method for transmitting data in a network having a hub device
connected to at least one peripheral device, comprising:

- generating a token;
- broadcasting, by the hub device, the token on the network;
- receiving the broadcast token at the peripheral device;
- determining, at the peripheral device, that the token identifies the peripheral device;
- analyzing the token to determine a size and direction of a current data transfer when the
token identifies the peripheral device; and
- transferring data between the peripheral device and the hub device according to the
determined size and direction of the current data transfer.

Claim 22 (Original): The method of claim 21, wherein the network includes a plurality of
wireless unidirectional communication streams; and

- wherein the transferring data includes:
 - sending data over one of the communication streams.

Claim 23 (Original): The method of claim 21, wherein the generating a token includes:

- accessing a data block in the hub device to identify an address and a communication
stream for the current data transfer, and
- generating the token based on the identified address and communication stream.

Claim 24 (Original): The method of claim 23, wherein the determining includes:

- decoding the token to identify the address and the communication stream, and
- analyzing the identified address to determine whether the identified address matches an
address of the peripheral device.

Claim 25 (Original): The method of claim 24, wherein the analyzing the identified address includes:

determining whether the identified communication stream is active for the identified address.

Claim 26 (Original): The method of claim 21, wherein the transferring includes: transmitting the data in multiple forms.

Claim 27 (Original): The method of claim 26, wherein the transmitting includes:

sending the data in an original form and at least one of a complemented form and a reverse order form.

Claim 28 (Original): The method of claim 26, further comprising:

differentiating the multiple forms of the data by a communications stream on which the data was transmitted.

Claim 29 (Original): The method of claim 26, further comprising:

combining the multiple forms of the data to reconstruct the data.

Claim 30 (Original): The method of claim 21, wherein the transferring includes:

scheduling, by the hub device, transmission of a status block from the peripheral device.

Claim 31 (Original): The method of claim 30, wherein the transferring further includes:

scheduling, by the hub device, transmission of data from the peripheral device when the status block from the peripheral device indicates that the peripheral device has data ready for transmission to the hub device.

Claim 32 (Currently amended): A memory used by at least one of a hub device and a peripheral device ~~to transfer~~ used in transferring data between the hub device and a plurality of the peripheral devices over a wireless network, comprising:

a network interface structure configured to determine whether and when to schedule a data transfer;

a link layer transport structure configured to receive data from the network interface structure and arrange for a reliable transmission of the data; and

a link layer driver structure configured to receive the data from the link layer transport structure and transmit the data under control of the link layer transport structure.

Claim 33 (Original): The memory of claim 32, wherein the link layer transport structure is further configured to generate a header having error checking information for the data transfer.

Claim 34 (Original): The memory of claim 32, wherein the link layer transport structure is further configured to use reverse-direction status transmissions for the data transfer.

Claim 35 (Original): The memory of claim 34, wherein the link layer transport structure is further configured to use retransmissions for the status transmissions and the data transfers.

Claim 36 (Original): A method for transferring data in a network connecting a hub device to a set of peripheral devices, the network operating according to a communications protocol having a plurality of alternating token slots and data transfer slots, the method, performed by the hub device, comprising:

identifying an address and a communication stream for a current data transfer, the address identifying one of the peripheral devices;

generating a token based on the identified address and communication stream;

broadcasting the token on the network during one of the token slots; and

communicating the data between the identified peripheral device and the hub device on the identified communication stream during one of the data transfer slots.

Claim 37 (Original): A hub device that communicates data in a network connecting the hub device to a plurality of peripheral devices, the network operating according to a communications protocol having a plurality of alternating token slots and data transfer slots, the hub device comprising:

a memory having instructions for:

identifying an address and a communication stream for a current data transfer, the address identifying one of the peripheral devices,

generating a token based on the identified address and communication stream, broadcasting the token on the network during one of the token slots, and communicating the data between the identified peripheral device and the hub device on the identified communication stream during one of the data transfer slots; and a processor that executes the instructions in the memory.

Claim 38 (Original): A method for transferring data in a network connecting at least one peripheral device to a hub device, the method, performed by one of the peripheral devices, comprising:

- receiving a token from the hub device that identifies the peripheral device;
- analyzing the token to determine a size and direction of a current data transfer; and
- transferring data to or receiving data from the hub device according to the determined size and direction of the current data transfer.

Claim 39 (Original): The method of claim 38, wherein the token includes an address and a communication stream identifier; and

- wherein the analyzing the token includes:
 - decoding the token to identify the address and the communication stream identifier,
 - determining whether the address identifies the peripheral device, and determining the size and direction of the current data transfer from the communication stream identifier.

Claim 40 (Original): A peripheral device that communicates data in a network connecting at least one peripheral device to a hub device, the peripheral device comprising:

- a memory that stores instructions; and
- a processor that executes the instructions in the memory to receive a token from the hub device that identifies the peripheral device, analyze the token to determine a size and direction of a current data transfer, and transfer data to or receive data from the hub device according to the determined size and direction of the current data transfer.

Claim 41 (Original): A communications protocol used in a network connecting a hub device to at least one peripheral device, the communications protocol having a plurality of frames comprising:

- at least one beacon that marks a start of one of the frames;
- at least one token transmission that identifies one of the peripheral devices for a data transfer; and
- at least one data transfer opportunity that permits the hub device to communicate a data block with the identified peripheral device.

Claim 42 (Original): The communications protocol of claim 41, wherein the token transmission includes an address of the identified peripheral device and a communication stream identifier that identifies a communication stream for the data transfer.

Claim 43 (Original): The communications protocol of claim 42, wherein the communication stream identifier includes data regarding a size and direction of the data transfer.